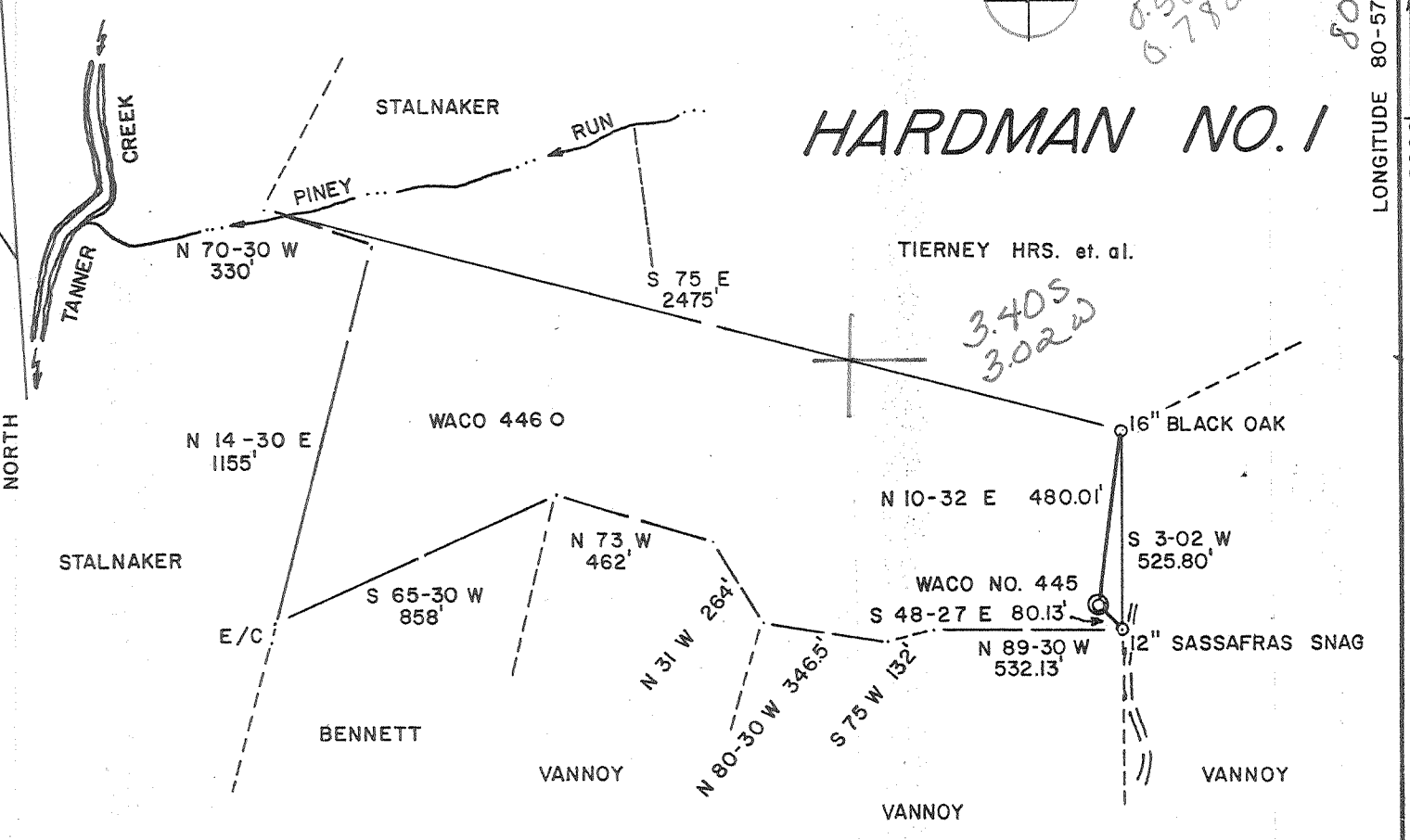
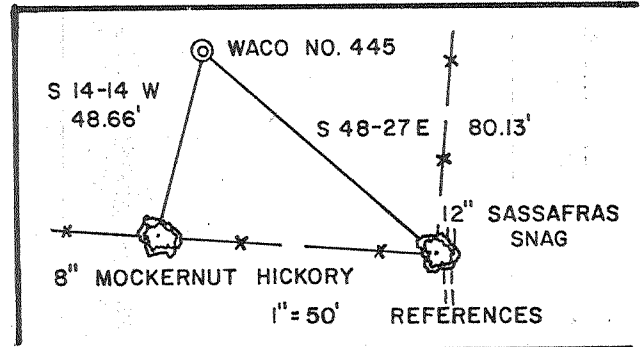
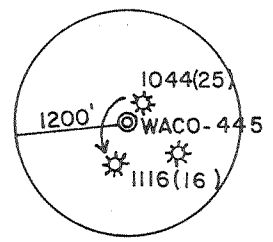


HARDMAN LEASE WACO NO. 445

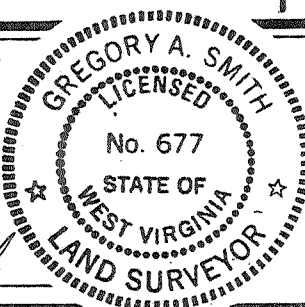
HARDMAN NO. 1



34.60
ACRES ±



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENERGY.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE APRIL 10, 19 86
 OPERATORS WELL NO. WACO NO. 445
HARDMAN NO. 1
 API WELL NO. 47 - 021 - 4485
 STATE COUNTY PERMIT

L.L.S. 677 Gregory A. Smith

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 19-25 J-1464
 PROVEN SOURCE OF ELEVATION TOP OF KNOB 1141' SCALE 1" = 500'

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENERGY
 OIL AND GAS DIVISION

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1171' WATERSHED PINEY RUN OF TANNER CREEK

DISTRICT DEKALB COUNTY GILMER QUADRANGLE TANNER 7.5'

SURFACE OWNER BANTZ STALNAKER ACREAGE 34.60
 ROYALTY OWNER STANLEY R. HARDMAN et. al. LEASE ACREAGE 34.60

PROPOSED WORK: LEASE NO. _____
 DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER _____
 PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION BENSON
 ESTIMATED DEPTH 5400'

WELL OPERATOR WACO OIL & GAS CO. INC. DESIGNATED AGENT STEPHEN HOLLOWAY
 ADDRESS P.O. BOX 397 ADDRESS P.O. BOX 397
GLENVILLE, WV 26351 GLENVILLE WV 26351

LONGITUDE 80-57-30 0962

COUNTY NAME PERMIT



Date January 10, 1987

Operator's

Well No. Waco #445

Farm Hardman # 1

API No. 47 - 021 - 4485

State of West Virginia

DEPARTMENT OF ENERGY

Oil and Gas Division

WELL OPERATOR'S REPORT OF

DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil / Gas X / Liquid Injection / Waste Disposal / (If "Gas," Production X / Underground Storage / Deep / Shallow X /)

LOCATION: Elevation: 1171' Watershed Tanner Creek District: Dekalb County Gilmer Quadrangle Tanner 7.5'

COMPANY Waco Oil & Gas Co., Inc. ADDRESS P.O.Box 397, Glenville, WV 26351 DESIGNATED AGENT Stephen E. Holloway ADDRESS P.O.Box 397, Glenville, WV 26351 SURFACE OWNER Bantz Stalnaker ADDRESS Tanner, WV MINERAL RIGHTS OWNER Stanley R. Hardman Et.Al. ADDRESS Marysville, Mi. OIL AND GAS INSPECTOR FOR THIS WORK Craig Duckworth ADDRESS Gassaway, WV PERMIT ISSUED August 18, 1986 DRILLING COMMENCED December 23, 1986 DRILLING COMPLETED December 30, 1986 IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Table with 4 columns: Casing & Tubing, Used in Drilling, Left in Well, Cement fill up Cu. ft. Rows include sizes 20-16, 13-10, 9 5/8, 8 5/8, 7, 5 1/2, 4 1/2, 3, 2, and Liners used.

GEOLOGICAL TARGET FORMATION Benson Depth 5400' feet Depth of completed well 6454 feet Rotary X / Cable Tools Water strata depths: Fresh X feet; Salt 1536' feet Coal seam depths: Is coal being mined in the area?

OPEN FLOW DATA Producing formation Shale, Elk, Alexander, Benson Pay zone depth See treatment feet Gas: Initial open flow Mcf/d Oil: Initial open flow Bbl/d Final open flow 1186 Mcf/d Final open flow Show Bbl/d Time of open flow between initial and final tests 4 hours Static rock pressure 1580 psig (surface measurement) after 48 hours shut in (If applicable due to multiple completion--)

(Continues on reverse side)

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

1st Stage: Shale (6248-5656) 500 Gal 15% HCL, 40 ton CO₂, 604 mcf N₂
 2nd Stage: Elk, Alexander (5485-5070) 500 Gal 15% HCL, 40 ton CO₂, 569 mcf N₂
 3rd Stage: Benson, Riley (4840-4506) 500 Gal 15% HCL, 40 ton CO₂, 549 mcf N₂
 4th Stage: Balltown, Speeclly (4180-3410) 1000 Gal 15% HCL, 80 Ton CO₂, 1234 mcf N₂

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Sand & Shale			0	143	
Sand, Shale, & Redrock			143	302	
Sand & Shale			302	485	
Sand, Shale, & Redrock			485	1283	
Sand & Shale			1283	1981	Hole @ 1536
Little Lime			1981	2002	
Blue Monday			2002	2027	
Big Lime			2027	2158	
Big Injun			2158	2164	
Sand & Shale			2164	3405	
Speeclly Section			3405	3742	
Shale			3742	3797	
Balltown Section			3797	4368	
Riley Section			4368	4772	
Shale			4772	4834	
Benson			4834	4840	
Sand & Shale			4840	5068	
Alexander			5068	5115	
Shale			5115	5227	
Elk Section			5227	5488	
Shale			5488	6384	
Marcellus Shale			6384	6434	
Onondaga Limestone			6434	6454	T.D.

404 2414
 813 3489
 832 4814
 825 5064
 830 5364

6434
 1171
 5263

(Attach separate sheets as necessary)

Waco Oil & Gas Co., Inc.

Well Operator

By: Daniel R. Chapman, Geologist

Date: January 10, 1987

Note: Regulation 2.02(i) provides as follows:
 "The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including coal, encountered in the drilling of a well."



1) Date: August 11, 19 86
 2) Operator's Well No. Waco #445 - Hardman No. 1
 3) API Well No. 47 - 021 - 4485
 State _____ County _____ Permit _____

7/85

RECEIVED
AUG 14 1986

STATE OF WEST VIRGINIA

DEPARTMENT OF ENERGY, OIL AND GAS DIVISION

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

APPLICATION FOR A WELL WORK PERMIT

- 4) WELL TYPE: A Oil _____ / Gas X /
 B (If "Gas", Production X / Underground storage _____ / Deep _____ / Shallow X /)
- 5) LOCATION: Elevation: 1171' Watershed: Tanner Creek
 District: DeKalb 933 County: Gilmer Quadrangle: Tanner 7.5
- 6) WELL OPERATOR WACO OIL & GAS CO. CODE: 51800 7) DESIGNATED AGENT Stephen E. Holloway
 Address PO Box 397 Address PO Box 397
Glenville, WV 26351 Glenville, WV 26351
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED 9) DRILLING CONTRACTOR:
 Name Craig Duckworth Name I.L. MORRIS WELL SERVICE, INC.
 Address Box 107, Davison Rt. Address PO Box 397
Gassaway, WV 26624 Glenville, WV 26351
- 10) PROPOSED WELL WORK: Drill X / Drill deeper _____ / Redrill _____ / Stimulate X /
 Plug off old formation _____ / Perforate new formation _____
 Other physical change in well (specify) _____
- 11) GEOLOGICAL TARGET FORMATION, Benson 435
 12) Estimated depth of completed well, 5400' feet
 13) Approximate strata depths: Fresh, 625 feet; salt, N/A feet.
 14) Approximate coal seam depths: none Is coal being mined in the area? Yes _____ / No X /

15) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS					FOOTAGE INTERVALS		CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
	Size	Grade	Weight per ft.	New	Used	For drilling	Left in well		
Conductor									Kinds
Fresh water									
Coal									Sizes
Intermediate	8 5/8	ERW	20#	X		750	750	225 sks	<i>CTS by rule 15.05 depths as required by rule 18.01</i>
Production	4 1/2	J-55	10.5#	X			5400	400 sks	
Tubing									Perforations:
Lin...									Top Bottom

OFFICE USE ONLY
DRILLING PERMIT

Permit number 47-021-4485

Date August 18 19 86

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector. (Refer to No. 8) Prior to the construction of roads, locations and pits for any permitted work. In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

The permitted work is as described in the Notice and Application, plat, and reclamation plan, subject to any modifications and conditions specified on the reverse hereof.

Permit expires August 18, 1988 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: <input checked="" type="checkbox"/>	Agent: <u>ALZ</u>	Plat: <u>MN</u>	Casing: <input checked="" type="checkbox"/> <u>MN</u>	Fee: <u>1643</u>	WPCP: <input checked="" type="checkbox"/> <u>MN</u>	S&E: <input checked="" type="checkbox"/> <u>MN</u>	Other: <input type="checkbox"/>
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NOTE: Keep one copy of this permit posted at the drilling location.

Director, Division of Oil and Gas

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.

John H. Johnston
Margaret J. Hassel